

## **Proposed Modifications to the Closure and Postclosure Care Plans for the Allen County Regional Landfill (ACRL)(7-1-15)**

These modifications are for the addition of a Closure Plan which is not in the existing Revised Facility Operating Plan (FOP) dated August 2011 (Reference 1) but is cited in the Permit Modification by Burns and McDonnell Engineering Company, Inc. dealing with the Horizontal and Vertical Expansion for Allen County Sanitary Landfill dated August 2008 (Reference 2). The other modification is for expansion of the Post Closure Care part of the Revised FOP into a Postclosure Care Plan. Note that the FOP write up is actually a Postclosure Plan. The distinction between the two plans is that the Postclosure Plan is based on an assumed 30 year period whereas the Postclosure Care Plan proposes the possible reduction and/or termination of the postclosure care period prior to 30 years.

**Existing Closure and Post Closure Plans** (Reference 2) – Chapter 4, Closure Plan, and Chapter 5, Post-Closure Plan, of the Burns and McDonnell Permit Modification are given in Appendix I.

**Existing Post Closure Plan** (Chapter in Reference 1) – Chapter (Section) R. Post Closure Care, of the August 2011 FOP is given in Appendix II.

### **Modified Closure and Postclosure Care Plans**

These plans will represent modifications to the Closure Plan in Reference 2 and the Closure and Post Closure Plans in the Revised FOP (1) as up-dated, stand-alone documents. They are presented in the following two subsections.

#### **CLOSURE PLAN**

- **INTRODUCTION**

This closure plan applies to the existing Subtitle D Phases I and II and other possible units for the approved MSW landfill expansion. A completed closure worksheet for the expanded landfill has been included in Appendix III of this report (Note that Appendix III was not prepared for inclusion in this document). Closure requirements are defined in **KAR 28-29-121 (a) to (o)**.

- **NOTIFICATION OF CLOSURE**

The individual ACRL units will be initially closed when filling operations are completed. KDHE will be notified at least 60 days before the last receipt of waste. Waste acceptance will cease when the waste elevations are approximately 50 inches below final elevations presented in the design drawings.

- **FINAL COVER**

All or part of a disposal unit's final cover will be installed when the unit's disposed waste height plus cover thickness equals the height of the closed adjacent units' final cover, e.g., when the waste height in Phase 1 (Phases 1A and 1B) reaches an elevation that will result in the closure cover elevations blending with the closure cover elevations of Cells 1A and 1B. It is possible this

construction may be delayed to allow for settlement and additional waste deposition. Generally, closure cover installation will be in a south-to-north direction.

The final cover system of closed units will consist of a minimum 18-inch compacted soil liner with a hydraulic conductivity less than or equal to  $1 \times 10^{-5}$  cm/sec. This layer will be overlain by a 40-mil HDPE FML. A double sided geocomposite (geonet and geotextile) will serve as a drainage layer over the FML. The geocomposite will be overlain with a 14-inch layer of nominally compacted soil for frost protection. The uppermost layer of the final cover system will consist of a minimum of six inches of topsoil capable of supporting vegetation. The type of vegetation will be a mixture of native grasses. All areas affected by final cover construction (including the landfill itself, borrow areas, etc.) will be graded to drain and seeded accordingly. The final covers of the landfill will be constructed with a 3: 1 horizontal to vertical slope. The minimum slopes of the final cover will be 5% to allow for drainage. The final covers of the landfill will be sloped to drain and graded to blend into the surrounding natural ground surface. Erosion control will be provided by diversion berms and the vegetation planted after closure. Intermediate erosion control will be provided by overlaying the soil covers with straw if the soil cannot be seeded due to seasonal weather.

The landfill covers will be graded such that precipitation that falls on the landfill will be directed to reinforced let-down channels that drain the water off the side slopes of the landfill. The let-down channels drain into the perimeter channel which routes the water to the sedimentation pond south of the landfill.

The total area to be covered includes the eight expansion cells as well as the overlap areas above the previously permitted Subtitle-D areas (Phases I and II) and the industrial waste landfill. The maximum area requiring a Subtitle-D final cover will be approximately 2,522,100 ft<sup>2</sup>, or 58 acres (assuming closure is not performed sequentially as described above). Upon closure, approximately 5,523,900 cubic yards, or 3,038,200 tons of MSW will be placed in the landfill expansion and overlap areas.

After the last final cover construction is completed and quarry activities have ended, the main access gate will be locked and public access to the site will not be allowed.

- **SCHEDULE**

The closure plan for the individual units of the landfill will be completed according to the following schedule:

- Notify KDHE in writing at least 60 days before closure.
- Begin implementation of the closure plan within 30 days after the date on which the site unit last receives waste.
- Complete closure activities for the disposal unit(s) to receive final cover in accordance with the Closure Plan. Areas to receive final cover shall be closed within 180 days after the last receipt of waste within the disposal unit or adjacent disposal units(s)(where landfilling operations overlap). The final closing of abutting Subtitle D units will not take place until one or both units are at their final elevations less final cover thickness.

- Provide KDHE with closure certification verifying that landfill closure has been completed in accordance with this plan. Certification shall be signed by an independent Kansas-licensed professional engineer.

- **FINANCIAL ASSURANCE**

ACRL currently uses the local government financial test as their form of financial assurance for landfill closure. A copy of an updated closure cost estimate worksheet that incorporates the proposed expansion is included in Appendix III (again, not included in this document). The updated cost estimate includes expenses for the closure of the proposed Cells 1A and 1B, and existing Phases I and II. When subsequent cells are constructed, they will be incorporated into the area used to calculate the closure cost estimate. The ACRL financial assurance documentation, including a certificate of liability insurance, can also be found in Appendix IV. (Note that Appendix IV was not prepared for inclusion in this document.).

## **POSTCLOSURE CARE PLAN**

- **INTRODUCTION**

BWM Policy 2014-P2, dated 6-27-14, served as the basis for this modification. Postclosure Requirements are defined in **KAR 28-29-121(p)**.

- **POSTCLOSURE CARE**

ACRL will be responsible for post-closure care at the site for 30 years after closure of the final landfill unit. A completed post-closure financial worksheet has been included in Appendix III of this report (again, not included in this document). A system of perimeter stormwater berms and channels constructed during the various phases of land fill development will prevent run-on from the surrounding area. The completed final covers will be inspected annually and anytime following a major rainfall event (4 or more inches in 24 hours). Maintenance will consist of recontouring the site with proper earth-moving equipment and seeding as necessary following occurrences of settlement, erosion, etc. Other site characteristics such as channels, berms, ponds, and access roads shall be inspected annually and maintained as required. All inspections shall be documented. After vegetation is established on the final cover, the landfill area will be utilized as greenspace. No post-closure use of the property shall disturb the integrity of the landfill cover unless justification is submitted to and approved by KDHE.

As per the **Preparation of Postclosure Care Reduction and/or Termination Plans**, TGD SW-2014-G1, landfill gas (LFG) emission sampling will be conducted quarterly on the closed pre-subtitle D area, and after they are closed on Phases I and II, and other subsequently closed units that are part of an expanded Gas Collection and Control System (GCCS) to establish trends so that possible reduction or termination of post-closure care activities can be identified. Gas sampling at the facility boundary and in structures will not be considered for future reductions or termination except that facility boundary sampling locations may change. Modifications in the monitoring of boundary locations will be requested as results indicate. Also, as subsequent phases (Cells 1A and 1B to 4A and 4B) are closed, similar, quarterly sampling efforts will be conducted to determine if leachate and LFG activities can be reduced or terminated.

Groundwater detection monitoring will be conducted semi-annually during the closure and postclosure periods. Assessment monitoring will be initiated and modified whenever warranted by KAR 28-29-113(b). After five years of inspection, ACRL may submit a request to the BWM for annual monitoring of groundwater samples provided there are no exceedances of the groundwater standards during the five year period.

- **Postclosure Care Termination**

Following completion of the 30 year Postclosure care period or its reduction to less than 30 years because of successful trend analyses for all landfill units, the BWM shall be provided with a postclosure certification verifying that landfill closure has been completed in accordance with this plan and **KAR 28-29-121(p)**. Certification shall be signed by an independent Kansas-licensed professional engineer.

## **References**

1. **Operating Plan for Allen County, Kansas, Municipal Solid Waste Landfill and Waste Tire and Industrial Rubber Landfill, KDHE Solid Waste Permit #101**, by Burns & McDonnell Engineering Co., Inc., Project No. 50801 (Revised August 2011).
2. **Permit Modification Horizontal & Vertical Expansion, Allen County Sanitary Landfill, Allen County, Kansas 37214**, by Burns & McDonnell Engineering Co., Inc. (August 2008).

## **Appendices**

### **Appendix 1 – Existing Closure and Post Closure Plans**

The following 4.0 and 5.0 pdf extracts (Click on the extract to identify the pdf portions of the text. The discontinuities are a result of copying and pasting the pdf documents.) were taken from the August 2008 **Permit Modification to the Horizontal and Vertical Expansion for the ACL (2)**. They represent respectively the current Closure and Post Closure Plans for the ACRL.

## **4.0 CLOSURE PLAN**

This closure plans applies to the existing Subtitle-D Phases I and II and the new proposed MSW landfill expansion. A completed closure worksheet for the expanded landfill has been included in Appendix I of this report.

### **4.1 NOTIFICATION OF CLOSURE**

The Allen County Landfill will be closed when filling operations are completed. KDHE will be notified at least 60 days before last receipt of waste. Waste acceptance will cease when the waste elevations are approximately 32 inches below final elevations presented in the design drawings.

## 4.2 FINAL COVER

The final cover system will consist of a minimum 18-inch compacted soil liner with a hydraulic conductivity less than or equal to  $1 \times 10^{-5}$  cm/sec. This layer will be overlain by a 40-mil HDPE FML. A double sided geocomposite (geonet and geotextile) will serve as a drainage layer over the FML. The geocomposite will be overlain with a 14-inch layer of nominally compacted soil for frost protection. The uppermost layer of the final cover system will consist of a minimum of six inches of topsoil capable of supporting vegetation. The type of vegetation will be a mixture of native grasses. All areas affected by final cover construction (including the landfill itself, borrow areas, etc.) will be graded to drain and seeded accordingly. The final cover of the landfill will be constructed with a 3:1 horizontal to vertical slope. The minimum slope of the final cover will be 5% to allow for drainage. The final cover of the landfill will be sloped to drain and graded to blend into the surrounding natural ground surface. Erosion control will be provided by diversion berms and the vegetation planted after closure. Intermediate erosion control will be provided by overlaying the soil cover with straw if the soil cannot be seeded due to seasonal weather.

The landfill cover will be graded such that precipitation that falls on the landfill will be directed to reinforced let-down channels that drain the water off the side slopes of the landfill. The let-down channels drain into the perimeter channel which routes the water to the sedimentation pond south of the landfill.

The largest area requiring final cover will occur when the landfill is completed. The total area to be covered includes the eight expansion cells as well as the overlap areas above the previously permitted Subtitle-D areas and the industrial waste landfill. The maximum area requiring a Subtitle-D final cover will be approximately 2,522,100 ft<sup>2</sup>, or 58 acres. Upon closure, approximately 5,523,900 cubic yards, or 3,038,200 tons of MSW will be placed in the landfill expansion and overlap areas.

After the final cover construction is completed and quarry activities have ended, the main access gate will be locked and public access to the site will not be allowed.

### **4.3 SCHEDULE**

The closure plan of the landfill will be completed according to the following schedule:

- Notify KDHE in writing at least 60 days before closure.
- Begin implementation of the closure plan within 30 days after the date on which the site last receives waste.
- Complete closure activities in accordance with the closure plan within 180 days after the last receipt of waste at the site.
- Provide KDHE with closure certification verifying that landfill closure has been completed in accordance with this plan. Certification shall be signed by an independent registered professional engineer.

### **4.4 FINANCIAL ASSURANCE**

Allen County Sanitary Landfill currently uses a trust fund as their form of financial assurance for landfill closure. A copy of an updated closure cost estimate worksheet that incorporates the proposed expansion is included in Appendix I. The updated cost estimate includes expenses for the closure of the proposed Cell 1A/B and existing Phases I and II. When Cell 2 is constructed, it will be incorporated into the area used to calculate the closure cost estimate. The Allen County landfill financial assurance documentation, including a certificate of liability insurance, can also be found in Appendix I.

## **5.0 POST-CLOSURE PLAN**

### **5.1 INTRODUCTION**

The purpose of post-closure assurance for landfills is to assure that sufficient funds are available to properly maintain and monitor a landfill during the post-closure period. Proper maintenance and monitoring includes maintaining the integrity of the final cover, operating and maintaining the leachate management system, and sampling and testing groundwater monitoring wells, gas monitoring wells, and surface water discharges.

## **5.2 POST-CLOSURE CARE**

Allen County will be responsible for post-closure care at the site for 30 years after closure of the landfill. A completed post-closure financial worksheet has been included in Appendix I of this report. A system of perimeter stormwater berms and channels constructed during the various phases of landfill development will prevent run-on from the surrounding area. The final cover will be inspected annually and anytime following a major rainfall event (4 or more inches in 24 hours). Maintenance will consist of recontouring the site with proper earth-moving equipment and seeding as necessary following occurrences of settlement, erosion, etc. Other site characteristics such as channels, berms, ponds, and access roads shall be inspected annually and maintained as required. All inspections shall be documented. After vegetation is established on the final cover, the landfill area will be utilized as greenspace. No post-closure use of the property shall disturb the integrity of the landfill cover unless justification is submitted to and approved by KDHE.

Groundwater and gas monitoring is required during the entire post-closure period. The groundwater system will be sampled semi-annually. However, Allen County may petition KDHE for less frequent sampling events (annually at a minimum). The landfill gas system will continue to be monitored at least quarterly throughout the post-closure period. All gas and groundwater wells shall be inspected at least annually to ensure any damage due to settlement or other means is repaired. Any questions that arise about the site during the post-closure period should be directed to:

Groundwater and gas monitoring is required during the entire post-closure period. The groundwater system will be sampled semi-annually. However, Allen County may petition KDHE for less frequent sampling events (annually at a minimum). The landfill gas system will continue to be monitored at least quarterly throughout the post-closure period. All gas and groundwater wells shall be inspected at least annually to ensure any damage due to settlement or other means is repaired. Any questions that arise about the site during the post-closure period should be directed to:

**Allen County Board of Commissioners**  
**1 N Washington**  
**Iola, Kansas 66749**  
**(620) 365-1406**



## Appendix II – Revised August 2011 (Facility) Operating Plan

### **R. POST CLOSURE CARE**

Allen County personnel will be responsible for post-closure care at the MSW Landfill for 30 years after closure. A system of perimeter storm water berms and channels constructed during the various phases of landfill development will prevent run-on from the surrounding area. The final cover and storm water system will be inspected annually and anytime following a major rainfall event (4 or more inches in 24 hours). Maintenance will consist of recontouring the site with proper earth-moving equipment and seeding as necessary. Other site characteristics such as channels and berms and access roads shall be inspected annually and maintained as required. Landfill personnel are experienced in identifying trends relating weather conditions to the condition of the storm water control system, landfill cover, and vegetation. All inspections shall be documented. No post-closure use of the property shall disturb the integrity of the landfill cover unless justification is submitted to and approved by KDHE.